ODM EDUCATIONAL GROUP
Changing your Tomorrow

SESSION	**: 10**
CLASS	**: IV**
SUBJECT	**: MATHEMATICS**
CHAPTER NUMBER	**: 13**
CHAPTER NAME	**: GEOMETRY**
SUBTOPIC	**: TERMS USED IN GEOMETRY, EX-13 A**

LEARNING OBJECTIVE

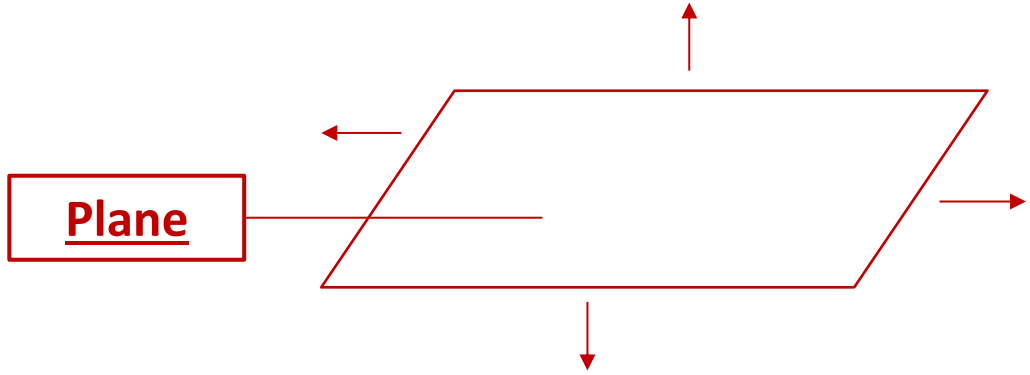
- **Enable the students to understand the different terms used in geometry.**

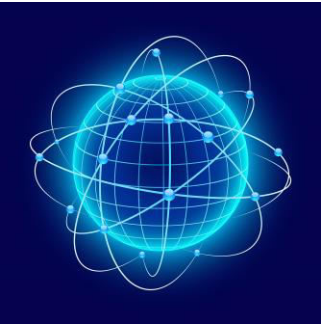
GEOMETRY

LINES

Term used in geometry

Plane



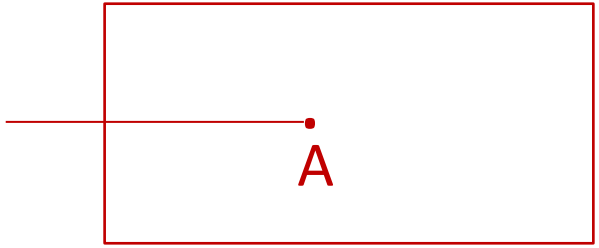


Plane It is a 2 dimensional flat surface and it does not have any thickness.

GEOMETRY

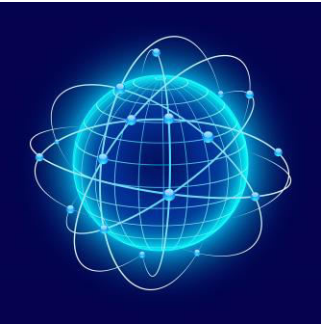
Point

Dot
(point)



Point

It is a dot represented on a plane surface. In the figure given alongside, the small dot represents a point. A point shows a definite position. It has no length, breadth and thickness, it has no shape or size. Points are represented by dots and named by using capital letters like A, B, Q, P, etc

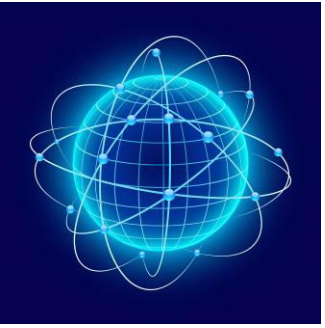


GEOMETRY

LINES

Line : A line has no breadth, no thickness and no end points. It can be extended to any length on **both sided**. To show this, arrow heads are **drawn** at **each end** of the line.

We can name a line in two ways. We can name it as PQ and it is often written as PQ. We can name the line as a single small letter of the alphabet such as **l**, **m**, **p** or **r** etc.

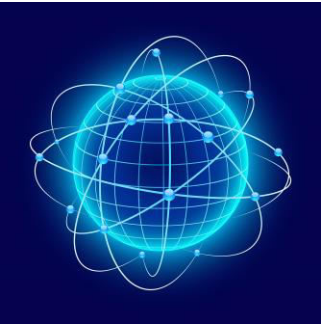


The line given above is represented by $\overleftrightarrow{XY}$ or $\overleftrightarrow{YX}$ or **m.**

GEOMETRY

Line Segment:

Line segment : A part of the line is known as the **line segment**, (e.g.) the part of the line between **points X** and **Y** is known as a **line segment**. A **line segment** has two **end points**. It has a length with no **breadth** and **thickness**.



GEOMETRY

EXERCISE – 13(A)

1. Fill in the blanks.

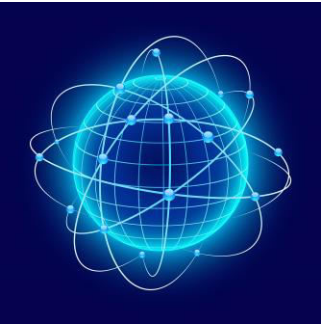
(a) A dot represents a point.

(b) A line has no end points.

(c) Line segment has two end points.

(d) A line can be extended in any directions.

(e) A line segments has a fixed length.

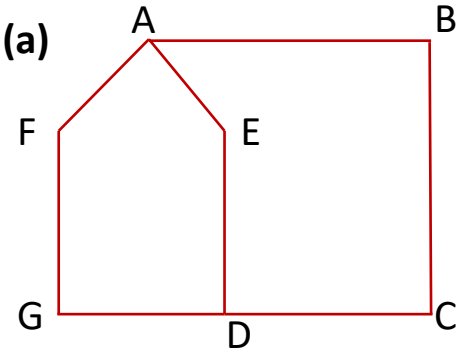


GEOMETRY

EXERCISE – 13(A)

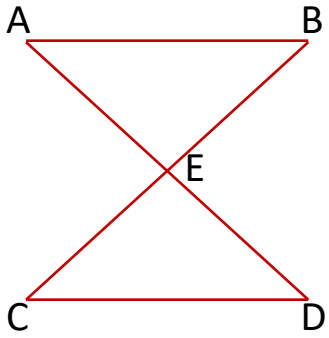
2. Count the number of line segments in the following figures.

(a)



9

(b)



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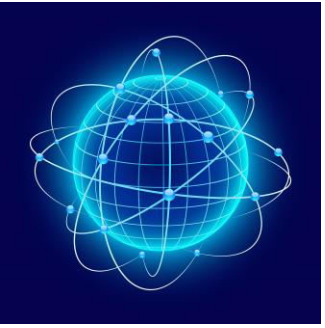
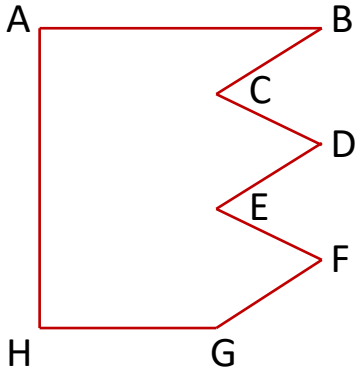


GEOMETRY

EXERCISE – 13(A)

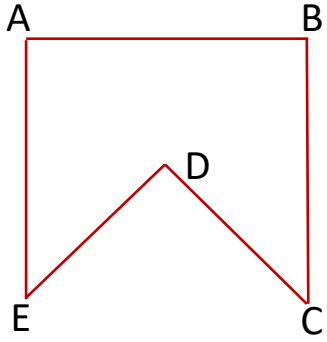
2. Count the number of line segments in the following figures.

(c)



8

(d)



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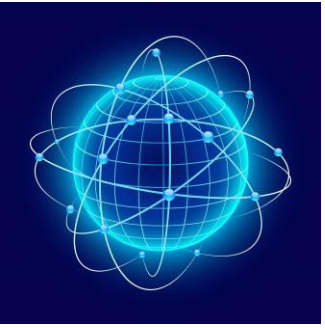


GEOMETRY

EXERCISE – 13(A)

3. Classify the following as line, line segment or point.

(a) 

Point

(b) 

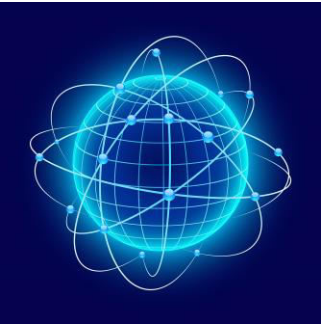
Line

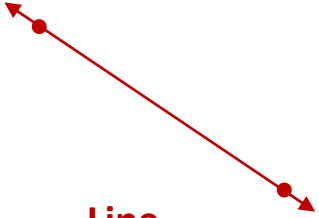
(c) 

Line segment

(d) 

Line segment



(e) 

Line

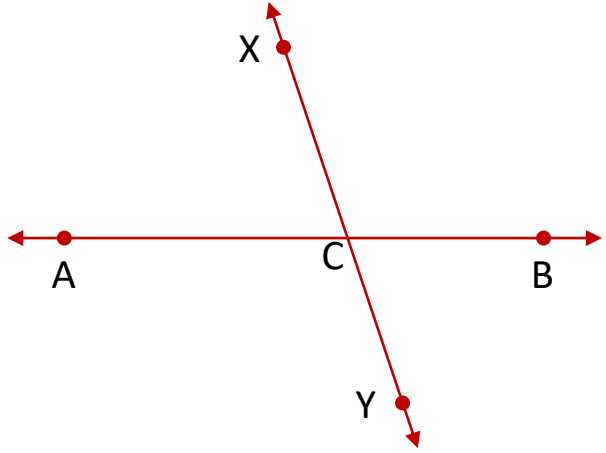
(f) 

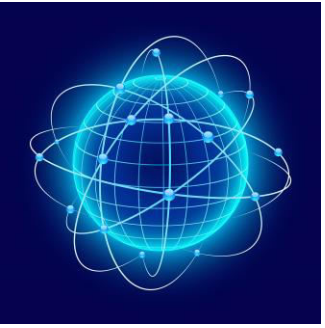
Point

GEOMETRY

EXERCISE – 13(A)

4. Draw a line AB of any length. Mark a point C on the line anywhere. Draw another line XY passing through C.



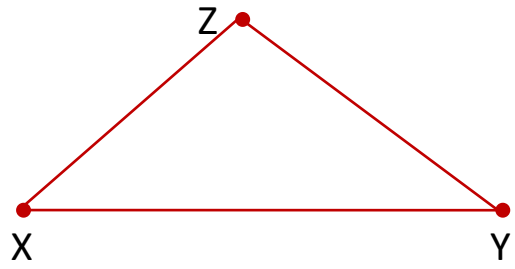


GEOMETRY

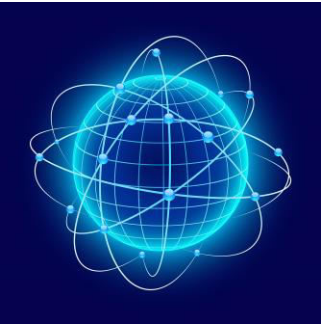
EXERCISE – 13(A)

5. Mark points X and Y anywhere on the sheet and then join both the points. Also mark a point Z anywhere above the line and then join Z with the point X and Y.

what shape do you get?



We get a triangle figure.



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HOME ASSIGNMENT:

- **Complete Exercise – 13 A in your note book.**

LEARNING OUTCOME:

Students are able to understand the different terms used in geometry.

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THANKING YOU

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SESSION	**: 11**
CLASS	**: IV**
SUBJECT	**: MATHEMATICS**
CHAPTER NUMBER	**: 13**
CHAPTER NAME	**: GEOMETRY**
SUBTOPIC	**: LETS RECALL,TYPES OF STRAIGHT LINES, EX-13 B**

LEARNING OBJECTIVE

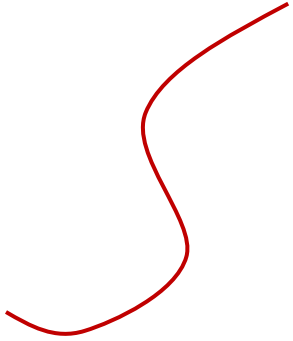
- **Enable the students to understand about the types of straight lines.**

GEOMETRY

LETS RECALL

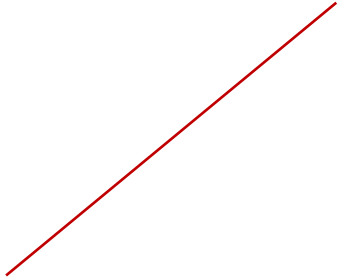
1. Tell whether the following lines are “curved” or “straight”.

(a)

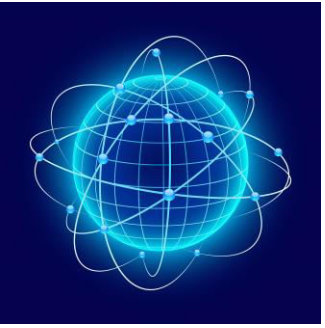


Curved

(b)



Straight

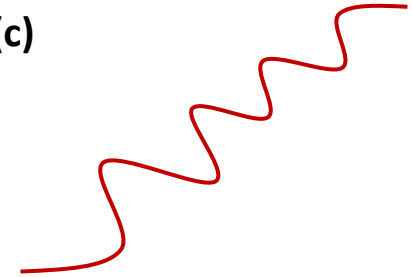


GEOMETRY

LETS RECALL

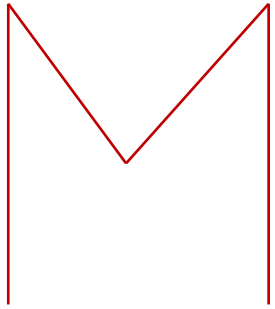
1. Tell whether the following lines are “curved” or “straight”.

(c)

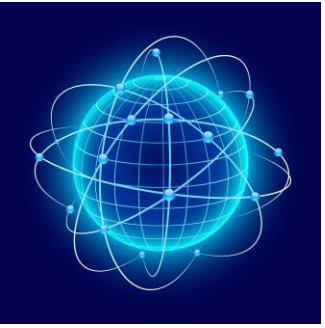


Curved

(d)



Straight

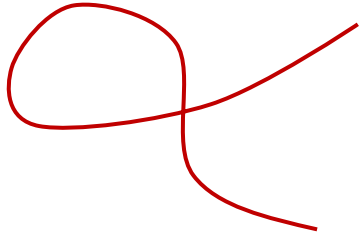


GEOMETRY

LETS RECALL

1. Tell whether the following lines are “curved” or “straight”.

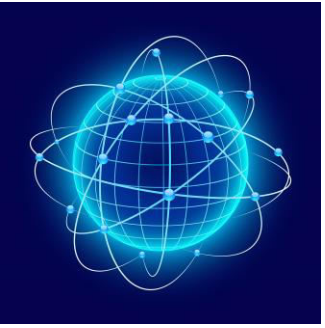
(e)



Curved

(f)

Straight

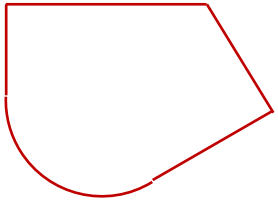


GEOMETRY

LETS RECALL

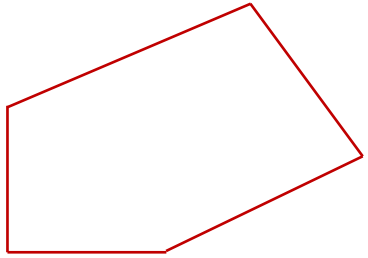
2. Find the number of straight lines in each figure.

(a)

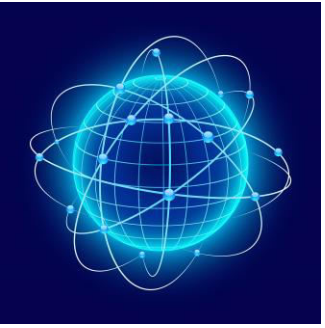


2

(b)



5



GEOMETRY

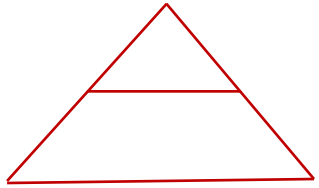
LETS RECALL

2. Find the number of straight lines in each figure.

(c)

5

(d)



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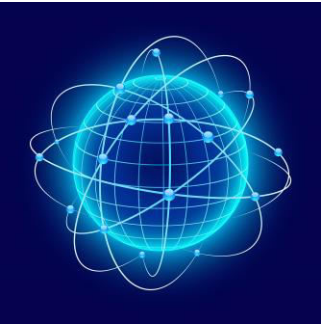
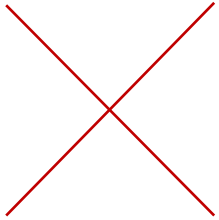


GEOMETRY

LETS RECALL

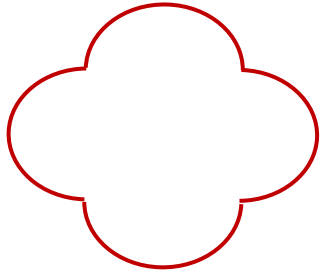
2. Find the number of straight lines in each figure.

(e)

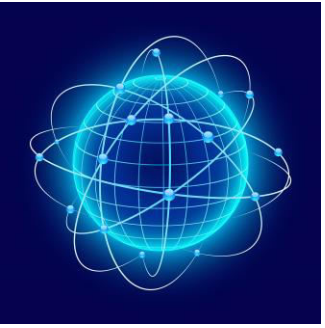


2

(f)



0

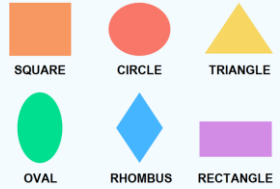


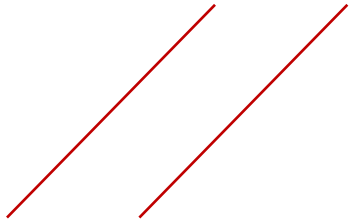
GEOMETRY

TYPES OF STRAIGHT LINES

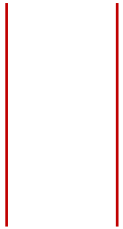
Parallel lines : The lines which do not meet at any points no matter in whatever direction we continue, are known as parallel lines.

The distance between these lines is always equal even if we measure it from anywhere.





(a)



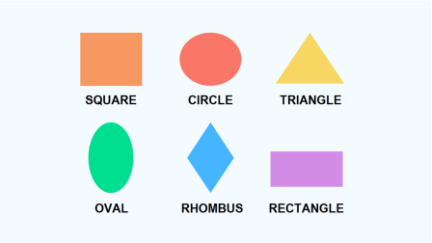
(b)

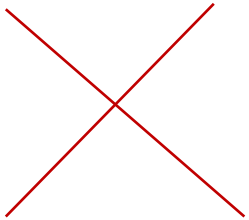
GEOMETRY

TYPES OF STRAIGHT LINES

Intersecting lines : The lines or line segments which cross each other at any point are known as **intersecting lines**.

Non-parallel lines are always intersecting lines.





(a)

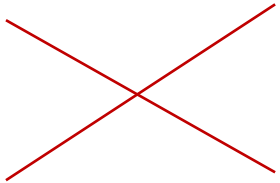
(b)

GEOMETRY

EXERCISE – 13(B)

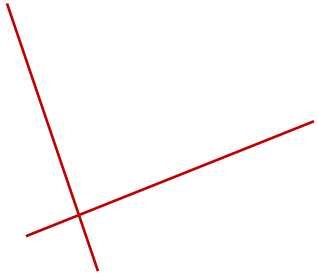
1. Identify the following lines as parallel or intersecting lines.

(a)

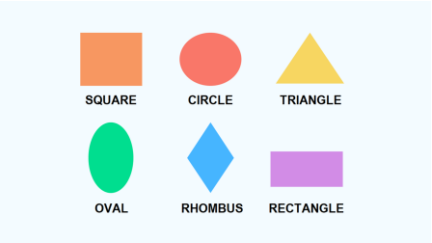


Intersecting lines

(b)



Intersecting lines

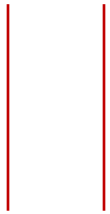


GEOMETRY

EXERCISE – 13(B)

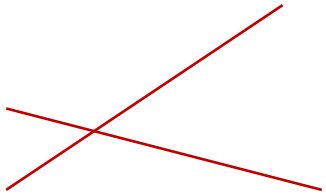
1. Identify the following lines as parallel or intersecting lines.

(c)

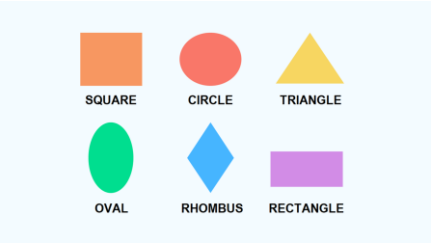


Parallel lines

(d)



Intersecting lines



GEOMETRY

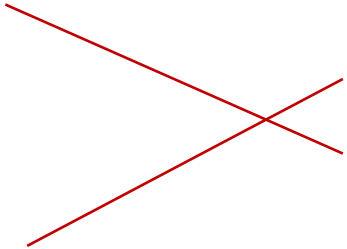
EXERCISE – 13(B)

1. Identify the following lines as parallel or intersecting lines.

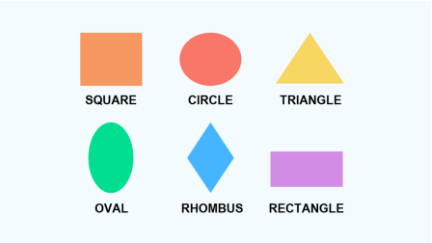
(e)

Parallel lines

(f)



Intersecting lines

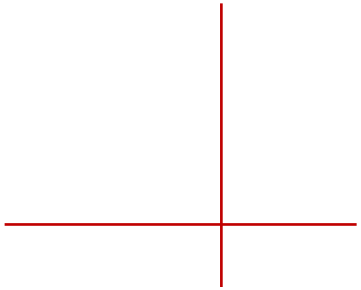


GEOMETRY

EXERCISE – 13(B)

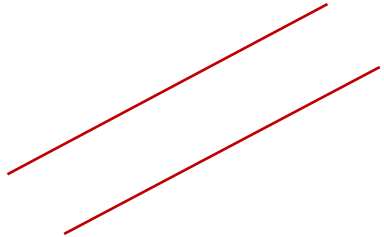
1. Identify the following lines as parallel or intersecting lines.

(g)

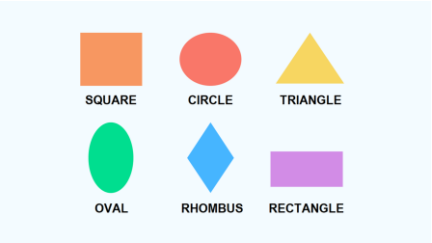


Intersecting lines

(h)



Parallel lines

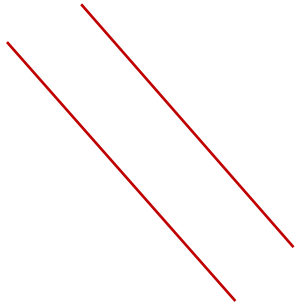


GEOMETRY

EXERCISE – 13(B)

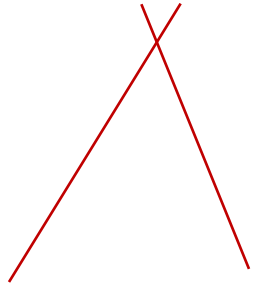
1. Identify the following lines as parallel or intersecting lines.

(i)

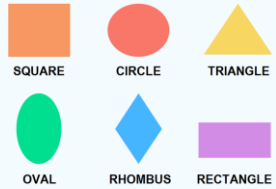


Parallel lines

(j)



Intersecting lines

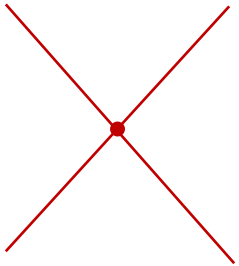


GEOMETRY

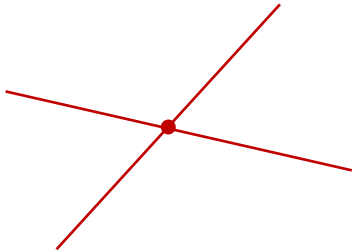
EXERCISE – 13(B)

2. Draw an intersecting line passing through the given point in each case.
(first one is done for you).

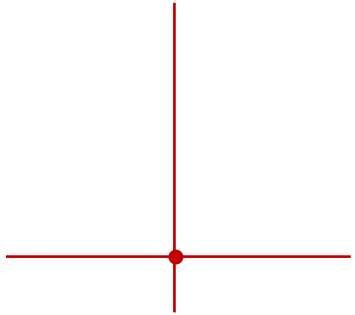
(a)

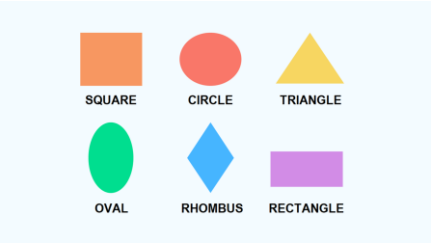


(b)



(c)



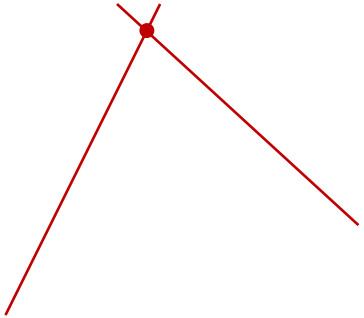


GEOMETRY

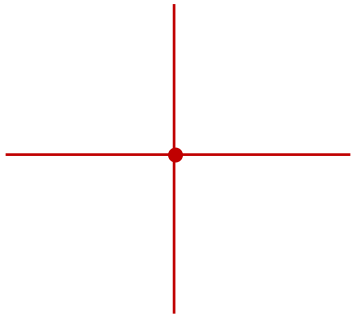
EXERCISE – 13(B)

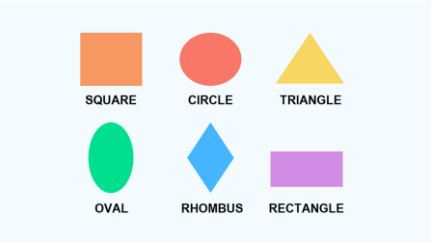
2. Draw an intersecting line passing through the given point in each case.
(first one is done for you).

(d)



(e)





GEOMETRY

EXERCISE – 13(B)

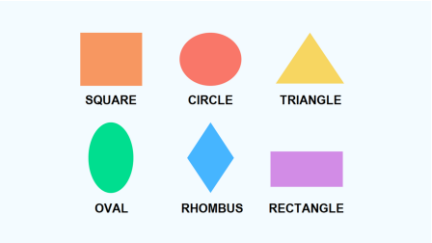
3. Fill in the blanks.

(a) Non-parallel lines are Intersecting lines.

(b) Distance between parallel lines remains same from anywhere.

(c) Parallel lines do not meet at any point.

(d) Lines which meet each other at any point are known as Intersecting lines.



LEARNING OUTCOME:

Students are able to understand about the different types of lines.

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SESSION	**: 12**
CLASS	**: IV**
SUBJECT	**: MATHEMATICS**
CHAPTER NUMBER	**: 13**
CHAPTER NAME	**: GEOMETRY**
SUBTOPIC	**: CIRCLE AND PARTS OF CIRCLE, ACTIVITY**

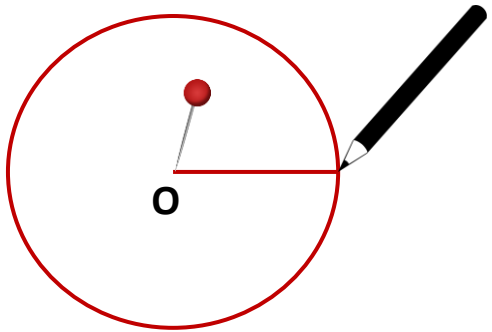
LEARNING OBJECTIVE

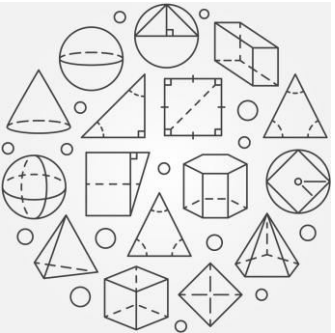
- **Enable the students to understand the different parts of circle by using an activity.**

CIRCLE

What is a circle?

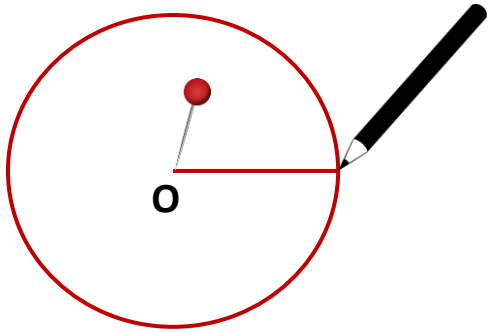
Take a thread and tie its one end around a pencil. Secure the opposite end of the thread
With a thumb pin onto a paper. Now move the pencil around. The pencil will make a path with the centre O. It is known as a **circle**.





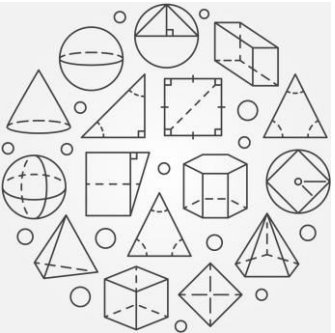
CIRCLE

Centre



Centre is the fixed point O of the circle in the given plane from which every point on the curve is equidistant.

Look at the above objects.

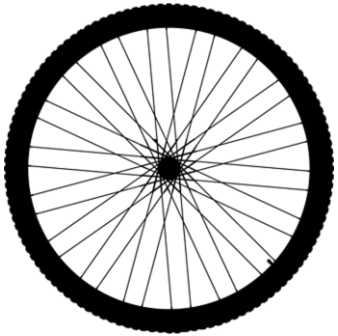


CIRCLE

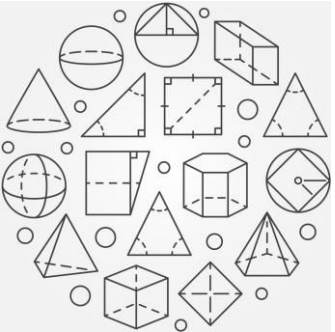
Pizza

CD

Plate



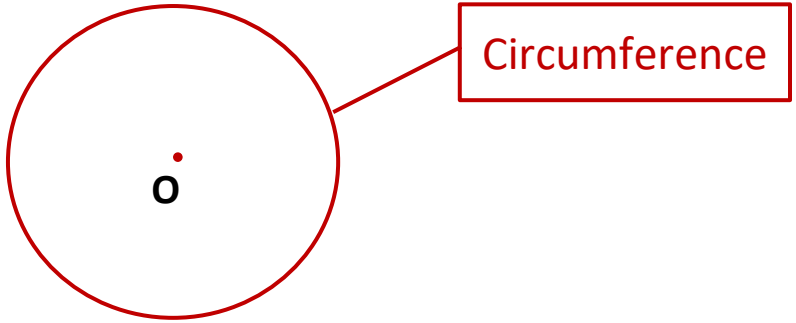
Bicycle wheel



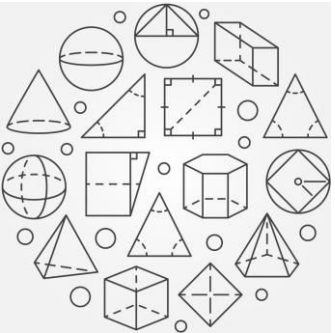
All the above objects are examples of a circle.

CIRCLE

Circumference

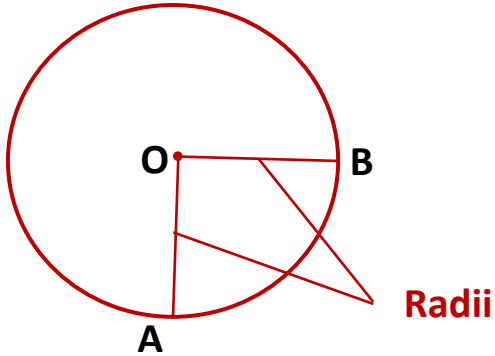


The length of the boundary of a circle is known as its **circumference**.

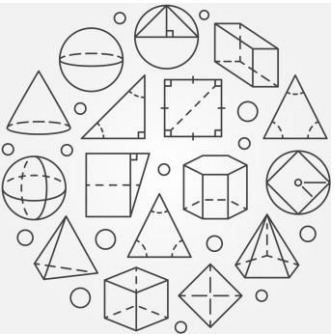


CIRCLE

Radius

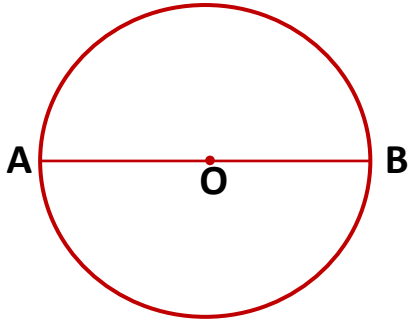


The line joining the **centre** of the **circle** to any point on the **circumference** is known as the **radius** of a circle. It is denoted by **R**. in the Given figure, **OA** and **OB** are the **radii** of the circle.

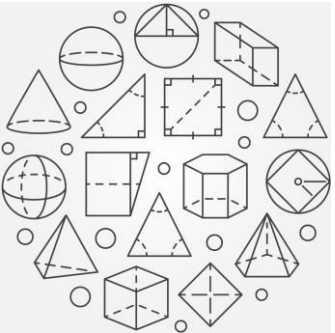


CIRCLE

Diameter



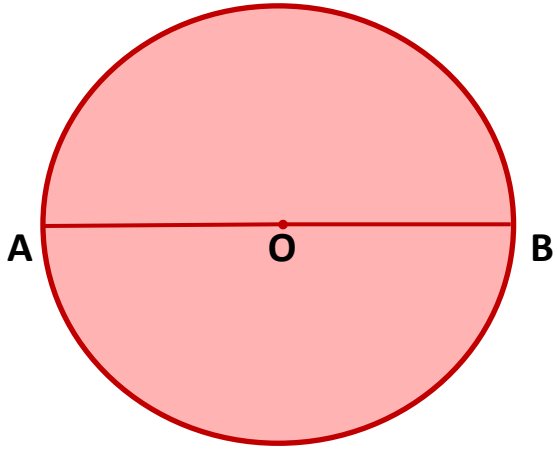
A **straight line** which passes through the **centre** of the **circle** with its end points lying on its **circumference** is known as a **diameter**. It is **denoted** by **D**.

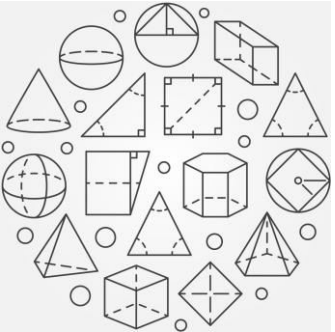


The **straight line AOB** in the **circle** is a **diameter**. We can make as many **diameters** as we want in a **circle**. **Diameters** of the same **circle** are always equal in length.

CIRCLE

Activity





O → Centre

OB → Radius

OA → Radius

AOB → Diameter

LEARNING OUTCOME:

Students are able to understand the different parts of circle by using an activity.

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SESSION	**: 13**
CLASS	**: IV**
SUBJECT	**: MATHEMATICS**
CHAPTER NUMBER	**: 13**
CHAPTER NAME	**: GEOMETRY**
SUBTOPIC	**: RELATION BETWEEN DIAMETER AND RADIUS, EX-13 C**

LEARNING OBJECTIVE

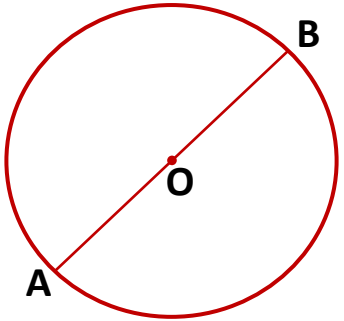
- **Enable the students to understand the relation in between the radius and diameter of circle.**

CIRCLE

Relation between diameter and radius

OA and **OB** are the **Radii** of the **circle**.

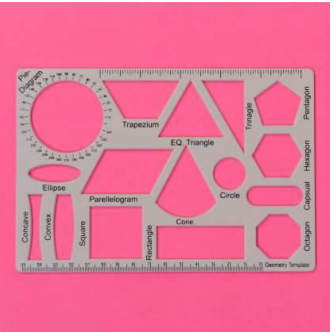
The straight line **AOB** is diameter.



$\therefore$ we can say that the diameter of a circle is twice its radius.

Diameter = 2 × Radius or Radius = $\frac{Diameter}{2}$

$$D = 2 \times R \quad \text{or} \quad R = \frac{D}{2}$$



CIRCLE

EXAMPLE - 1

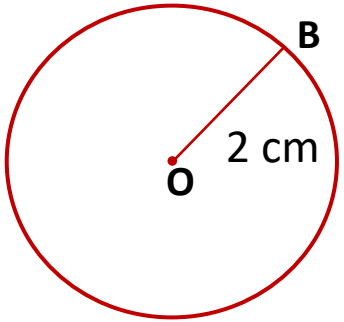
Find the diameter of the circle, if its radius is :

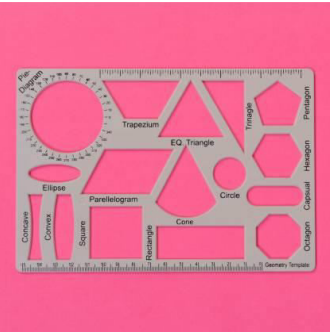
(a) 2 cm (b) 7 cm

(a) R = 2

Diameter = 2 × Radius = 2 × R

D = 2 × 2 = **4 cm**

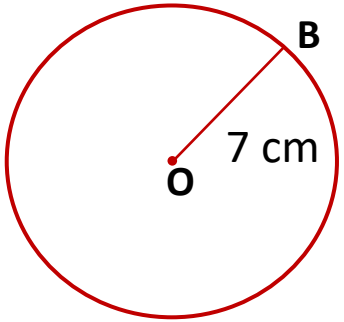




(b) R = 7

Diameter = 2 × Radius = 2 × R

D = 2 × 7 = **14 cm**



CIRCLE

EXAMPLE - 2

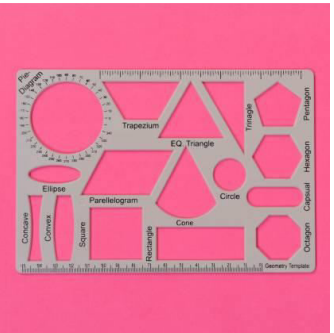
Find the radius of the circle, if its diameter is :

(a) 8 cm (b) 20 cm

(a) D = 8

$$\text{Radius} = \frac{Diameter}{2}$$

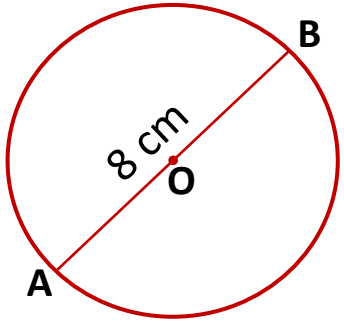
$$R = \frac{8}{2} = \textbf{4 cm}$$

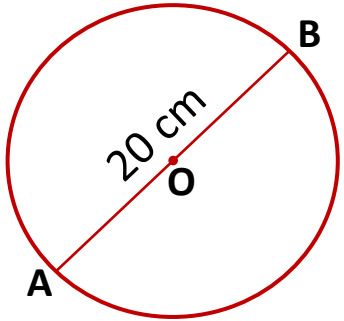


(b) D = 20

$$\text{Radius} = \frac{Diameter}{2}$$

$$R = \frac{20}{2} = \textbf{10 cm}$$



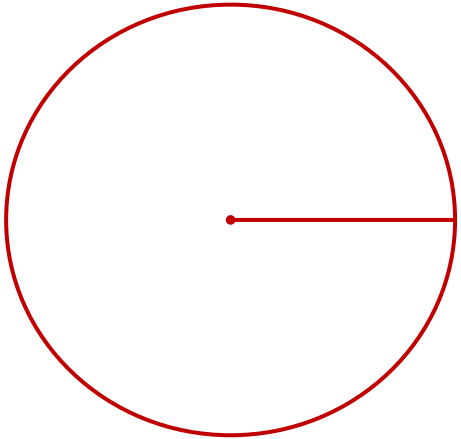


CIRCLE

EXERCISE – 13(C)

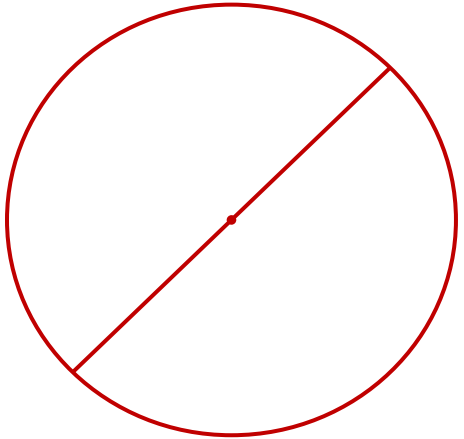
1. Draw the radius and the diameter in the following circle.

(a)

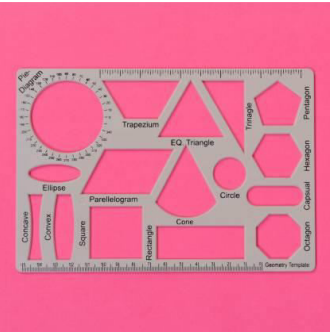


Radius

(b)



Diameter



CIRCLE

EXERCISE – 13(C)

2. Fill in the blanks.

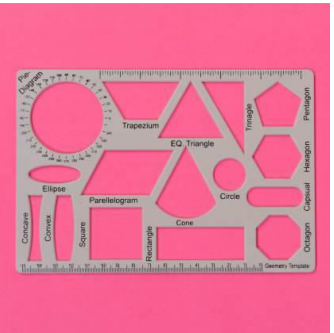
(a) Diameter is **Twice** the radius of a circle.

(b) Radius of a circle is the distance from the **Centre** to the circumference of a circle.

(c) A circle has **no** sides.

(d) Diameter of the circle always passes through the **Centre**.

(e) Radius of a circle is half the **diameter** of the circle.



CIRCLE

EXERCISE – 13(C)

3. Find the radii of the circles whose diameters are given as follows :

(a)

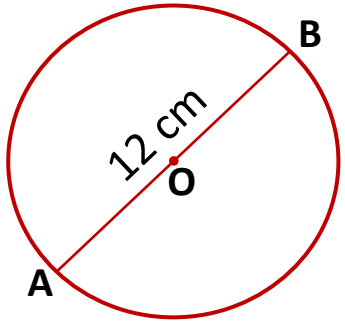
1

2 cm.

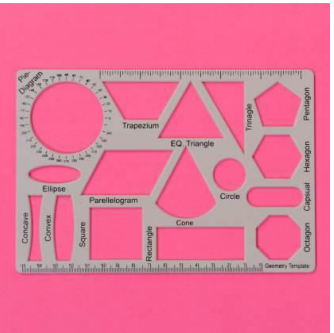
D = 12

Radius = $\frac{Diameter}{2}$

R = $\frac{12}{2}$ = **6 cm**



Radius = 6 cm



CIRCLE

EXERCISE – 13(C)

3. Find the radii of the circles whose diameters are given as follows :

(b)

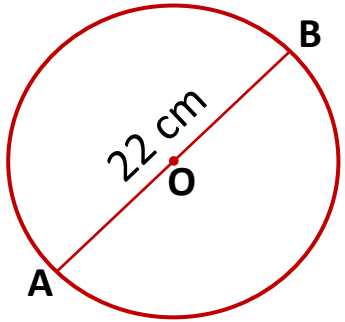
2

2 cm.

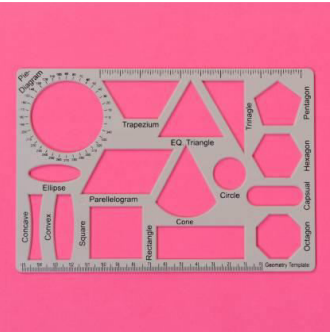
D = 22

Radius = $\frac{Diameter}{2}$

R = $\frac{22}{2}$ = **11 cm**



Radius = 11 cm



CIRCLE

EXERCISE – 13(C)

3. Find the radii of the circles whose diameters are given as follows :

(c)

1

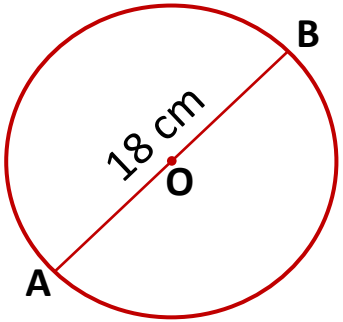
8 cm.

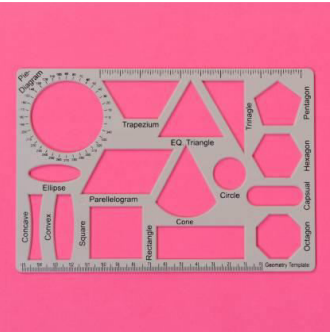
D = 18

$$\text{Radius} = \frac{Diameter}{2}$$

$$R = \frac{18}{2} = \mathbf{9\ cm}$$

Radius = 9 cm





CIRCLE

EXERCISE – 13(C)

3. Find the radii of the circles whose diameters are given as follows :

(d)

2

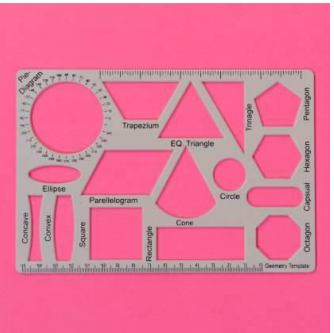
4 cm.

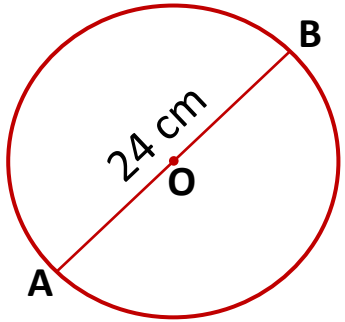
D = 24

$$\text{Radius} = \frac{Diameter}{2}$$

$$R = \frac{24}{2} = \textbf{12 cm}$$

Radius = 12 cm





CIRCLE

EXERCISE – 13(C)

3. Find the radii of the circles whose diameters are given as follows :

(e)

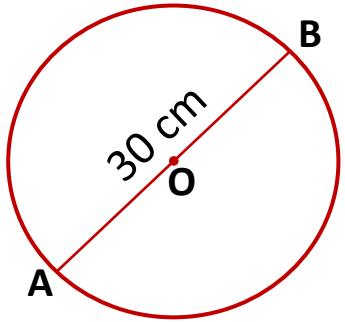
3

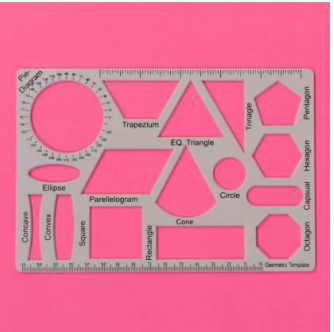
0 cm.

D = 30

Radius = $\frac{Diameter}{2}$

R = $\frac{30}{2}$ = **15 cm**





Radius = 15 cm

CIRCLE

EXERCISE – 13(C)

4. Find the diameter of the circles whose radii are given as follows :

(a)

1

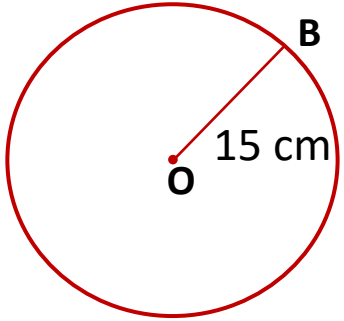
5 cm.

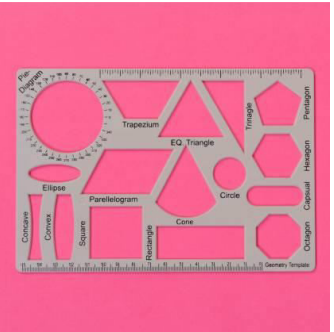
R = 15

Diameter = 2 × Radius = 2 × R

D = 2 × 15 = **30 cm**

Diameter = 30 cm





CIRCLE

EXERCISE – 13(C)

4. Find the diameter of the circles whose radii are given as follows :

(b)

1

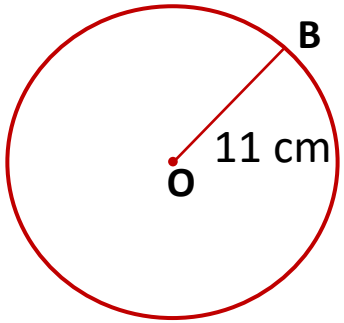
1 cm.

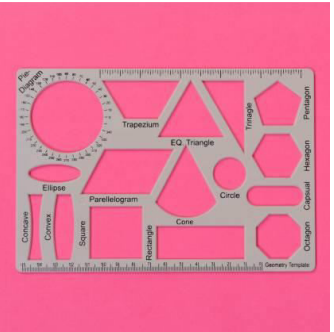
R = 11

Diameter = 2 × Radius = 2 × R

D = 2 × 11 = **22 cm**

Diameter = 22 cm





CIRCLE

EXERCISE – 13(C)

4. Find the diameter of the circles whose radii are given as follows :

(c)

2

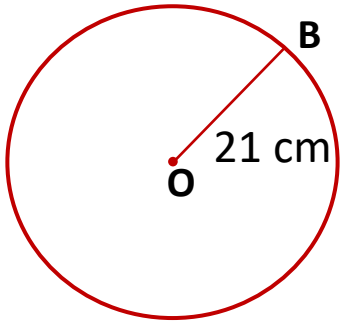
1 cm.

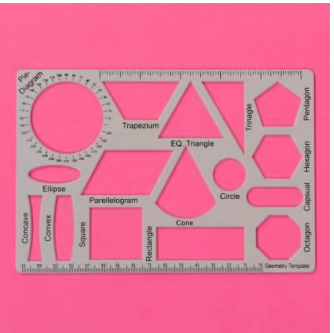
R = 21

Diameter = 2 × Radius = 2 × R

D = 2 × 21 = **42 cm**

Diameter = 42 cm





CIRCLE

EXERCISE – 13(C)

4. Find the diameter of the circles whose radii are given as follows :

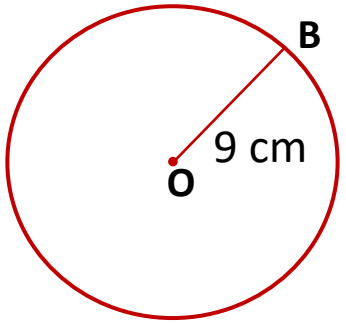
(d) 9 cm.

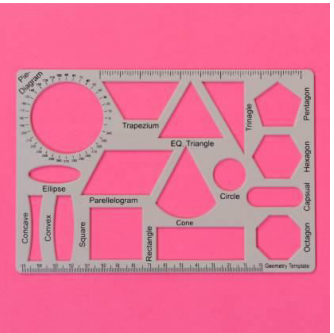
R = 9

Diameter = 2 × Radius = 2 × R

D = 2 × 9 = **18 cm**

Diameter = 18 cm





CIRCLE

EXERCISE – 13(C)

4. Find the diameter of the circles whose radii are given as follows :

(e)

2

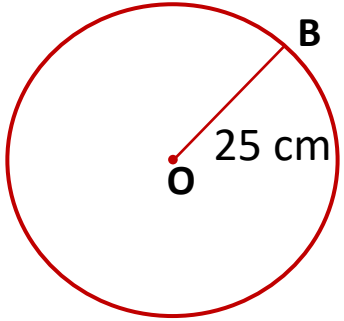
5 cm.

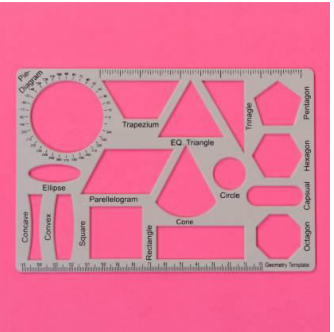
R = 25

Diameter = 2 × Radius = 2 × R

D = 2 × 25 = **50 cm**

Diameter = 50 cm





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HOME ASSIGNMENT:

- **Complete Exercise – 13 C in your note book.**

LEARNING OUTCOME:

Students are able to understand the relation in between the radius and diameter of circle.

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THANKING YOU

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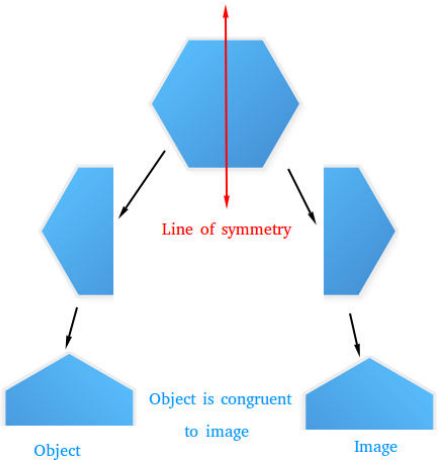
SESSION	**: 14**
CLASS	**: IV**
SUBJECT	**: MATHEMATICS**
CHAPTER NUMBER	**: 13**
CHAPTER NAME	**: GEOMETRY**
SUBTOPIC	**: SYMMETRY, EX-13 F, CLASS TEST**

LEARNING OBJECTIVE

- **Enable the students to understand the meaning of symmetry and to recall the whole chapter through the class test.**

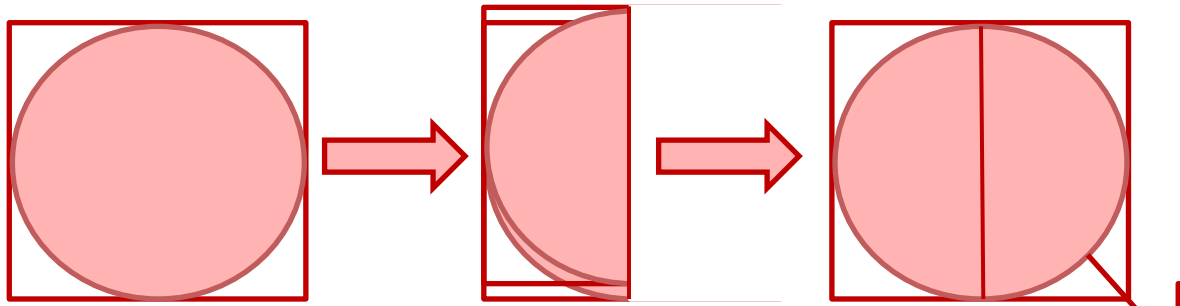
SYMMETRY

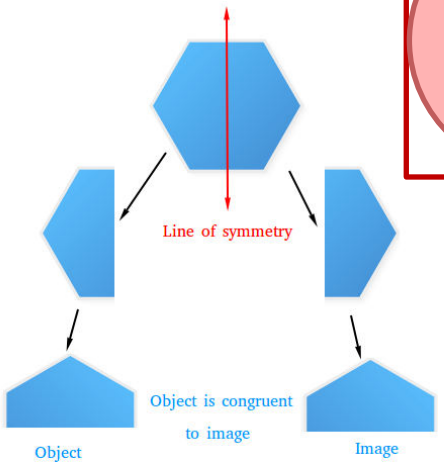
Reflection symmetry or mirror **symmetry** occurs when a line is drawn to divide a shape in two **halves** such that each half is a **reflection** of the other.



SYMMETRY

For example, take a circular paper. Fold the paper from the centre. The two halves completely overlap with each other. Thus, we say that a circle shows reflection symmetry.



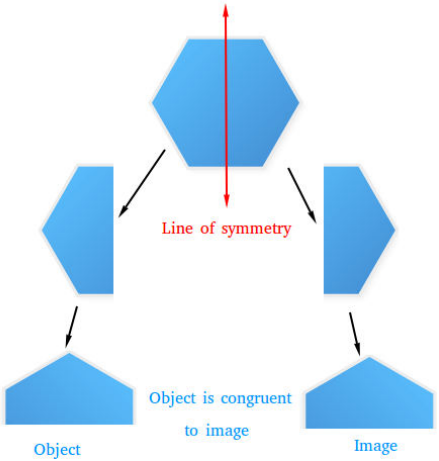


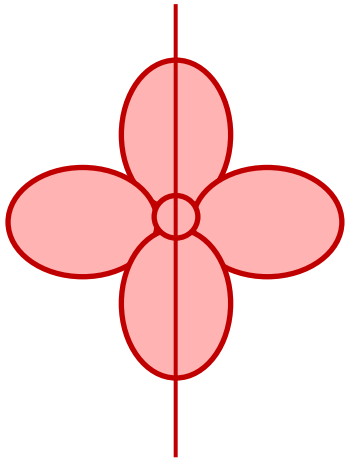
The crease that is **formed** upon **folding** the circle is known as the line of **symmetry**.

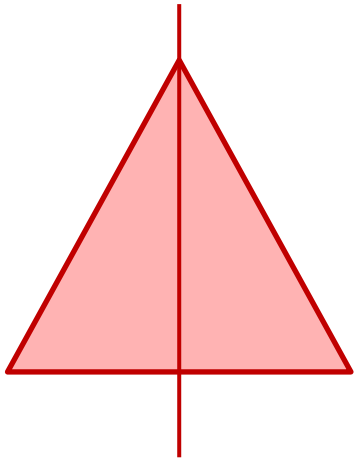
SYMMETRY

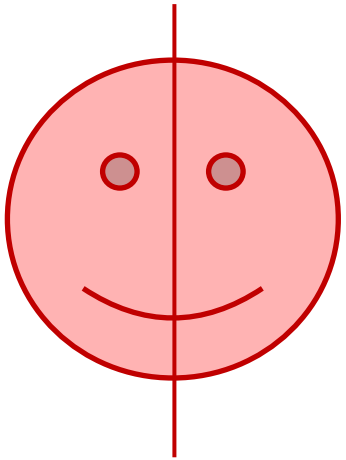
look at some more examples given below. You will observe that the left half is a mirror image of the right half and vice-versa. Therefore, theses figures are symmetrical

EXAMPLE





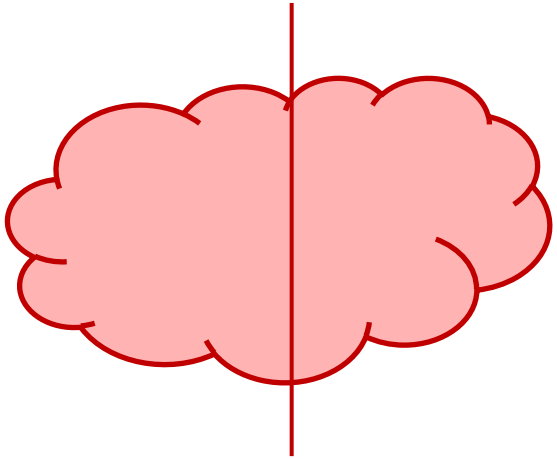


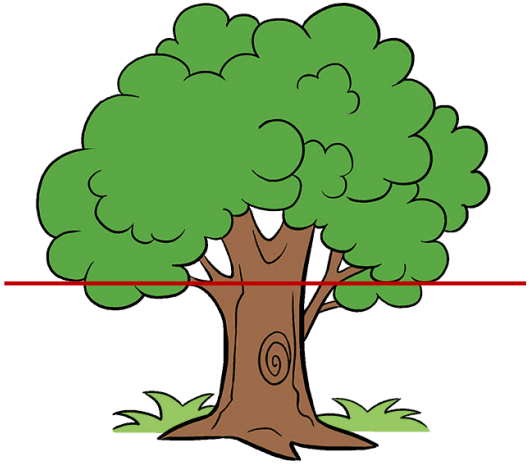


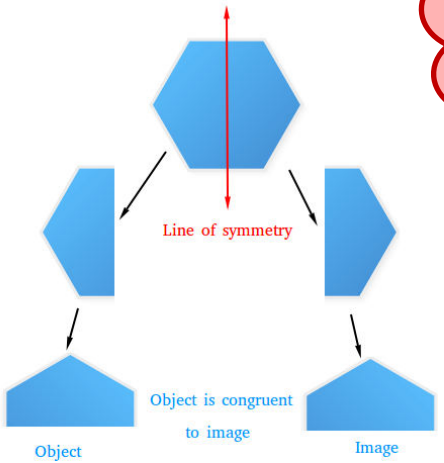
SYMMETRY

Not all figures are symmetrical. Look at the following example.

EXAMPLE







Do these **figures** show **reflection symmetry** along the line of **symmetry**? No, they don't. Such figures are **asymmetrical**.

SYMMETRY

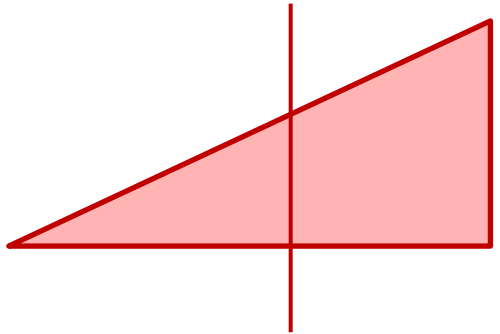
EXERCISE – 13(F)

1. Tell '**Yes**' or '**No**' whether the line drawn is a line of symmetry or not.

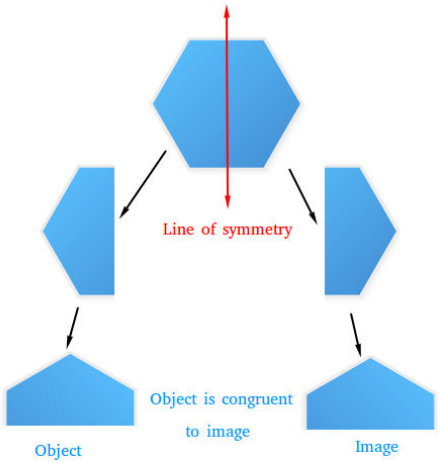
(a)

Yes

(b)



No

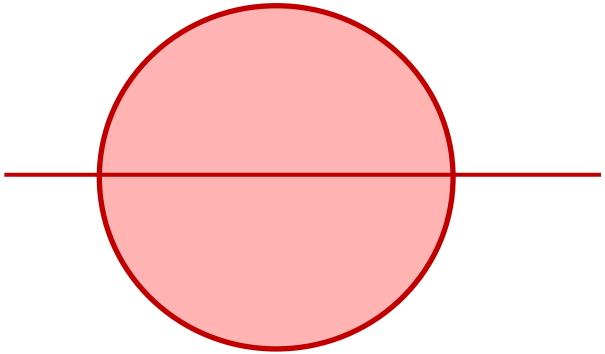


SYMMETRY

EXERCISE – 13(F)

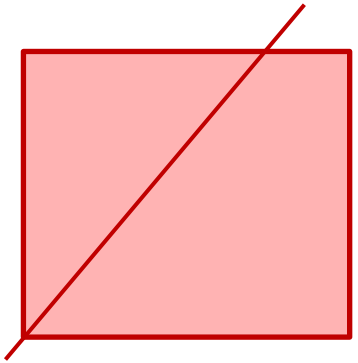
1. Tell '**Yes**' or '**No**' whether the line drawn is a line of symmetry or not.

(c)

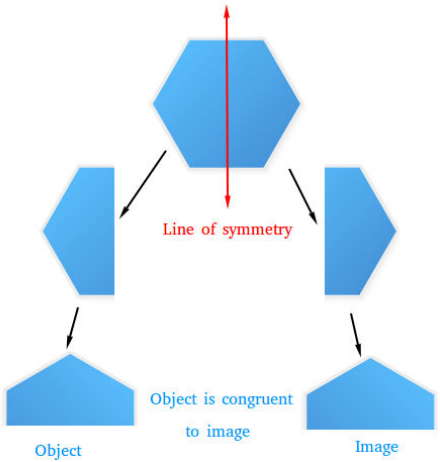


Yes

(d)



No

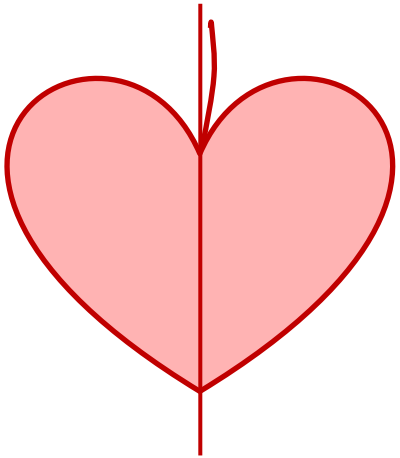


SYMMETRY

EXERCISE – 13(F)

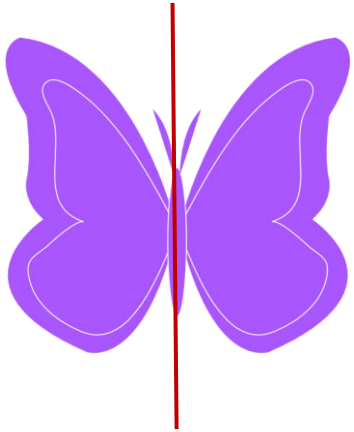
1. Tell '**Yes**' or '**No**' whether the line drawn is a line of symmetry or not.

(e)

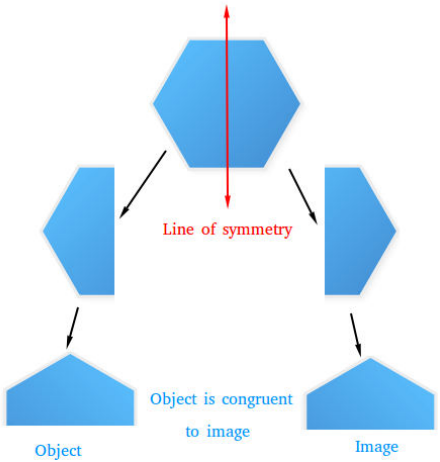


No

(f)



Yes

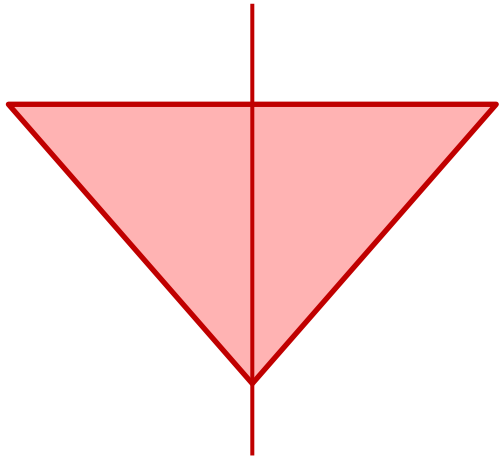


SYMMETRY

EXERCISE – 13(F)

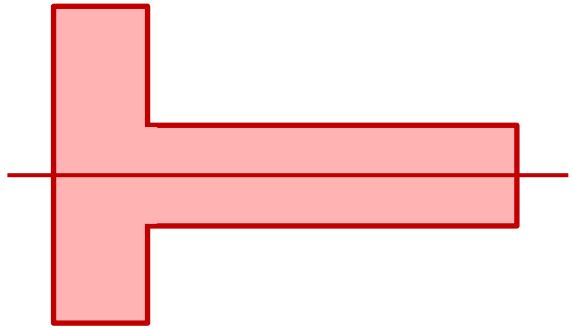
1. Tell '**Yes**' or '**No**' whether the line drawn is a line of symmetry or not.

(g)

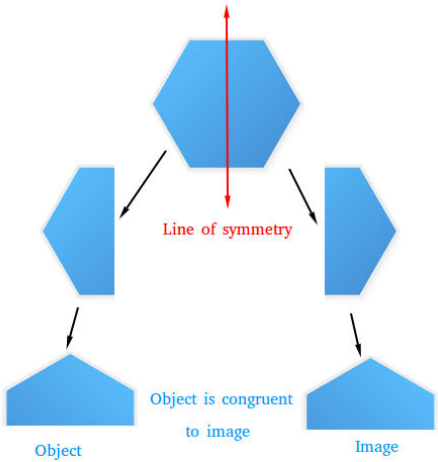


Yes

(h)



Yes

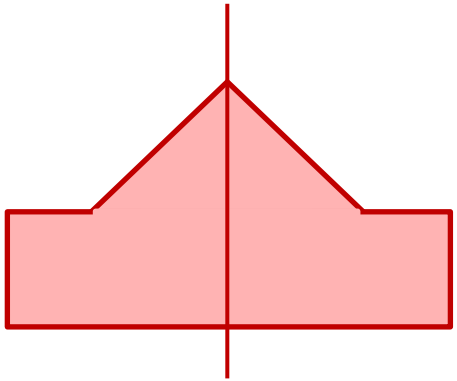


SYMMETRY

EXERCISE – 13(F)

1. Tell '**Yes**' or '**No**' whether the line drawn is a line of symmetry or not.

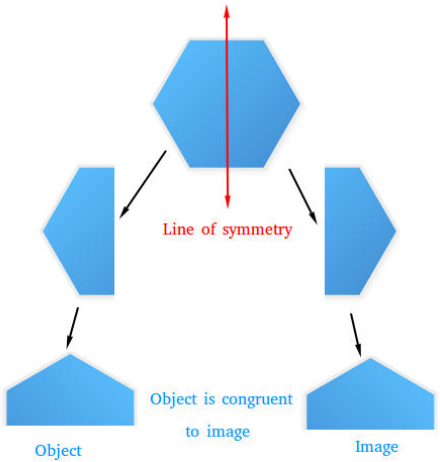
(i)



Yes

(j)

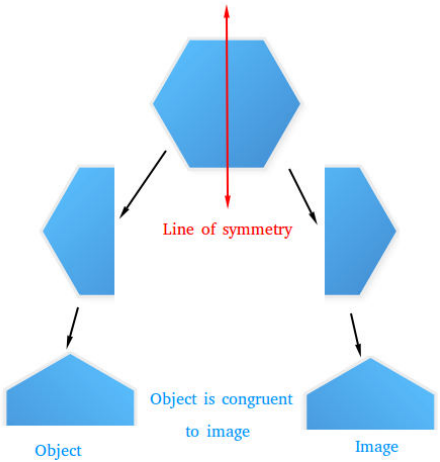
No



SYMMETRY

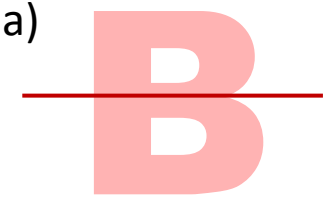
EXERCISE – 13(F)

2. Draw the line of symmetry in the alphabets given below.

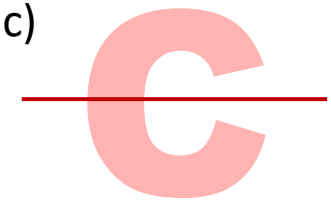


(a)

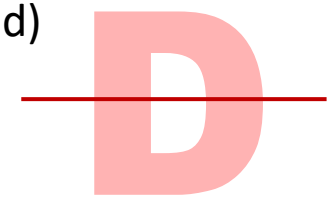
(a)



(c)



(d)

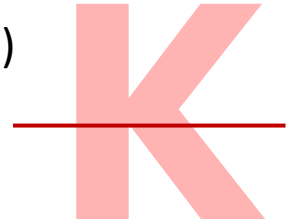


SYMMETRY

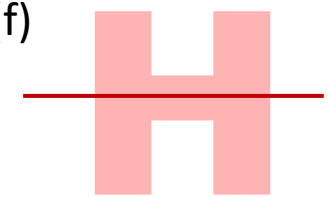
EXERCISE – 13(F)

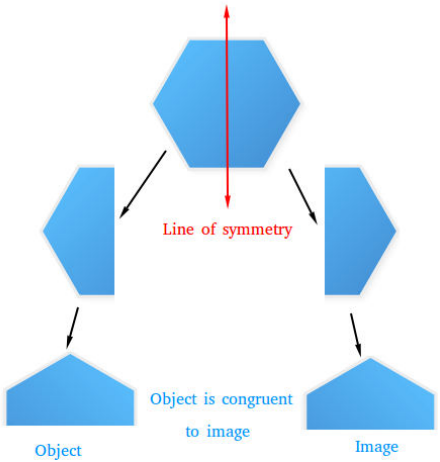
2. Draw the line of symmetry in the alphabets given below.

(e)



(f)



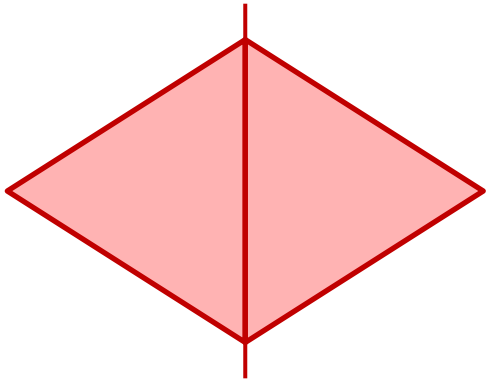


SYMMETRY

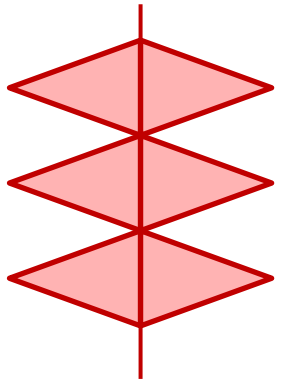
EXERCISE – 13(F)

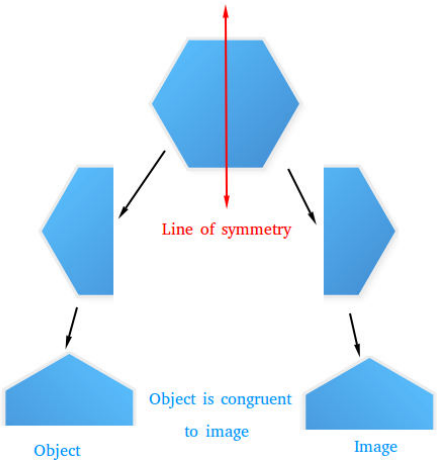
3. Complete the symmetrical figures given below. One is done for you.

(a)



(b)

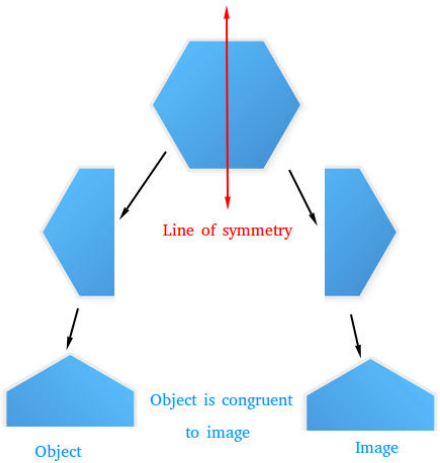




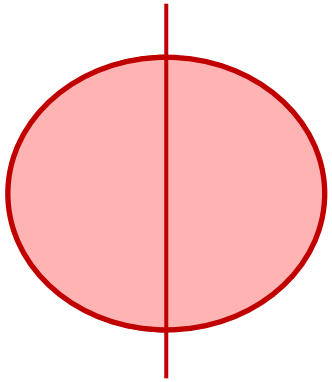
SYMMETRY

EXERCISE – 13(F)

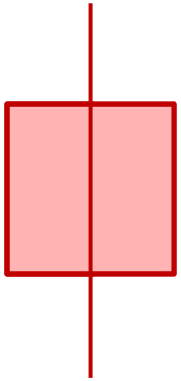
3. Complete the symmetrical figures given below. One is done for you.



(c)



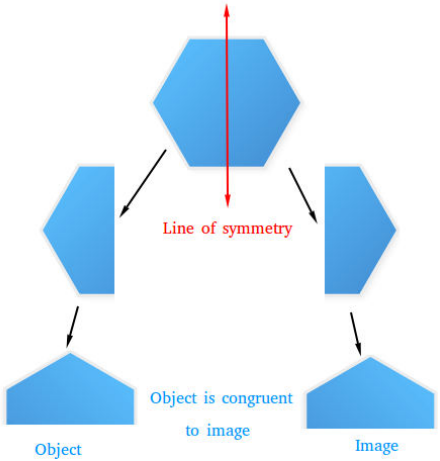
(d)



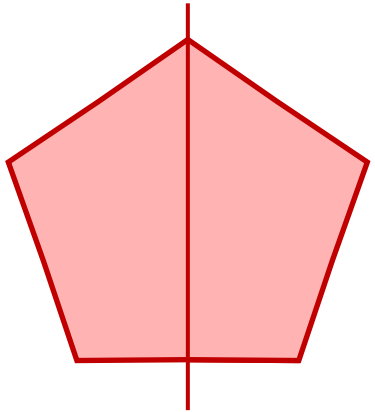
SYMMETRY

EXERCISE – 13(F)

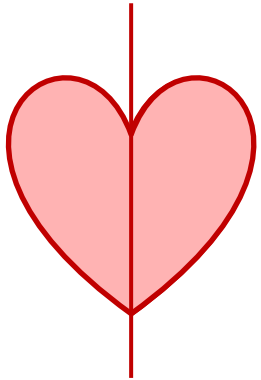
3. Complete the symmetrical figures given below. One is done for you.



(e)



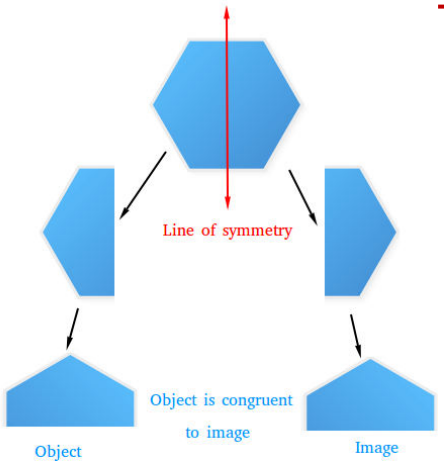
(f)



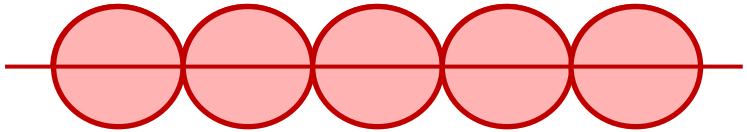
SYMMETRY

EXERCISE – 13(F)

3. Complete the symmetrical figures given below. One is done for you.



(g)



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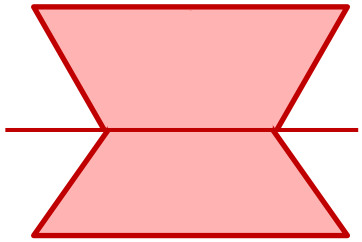
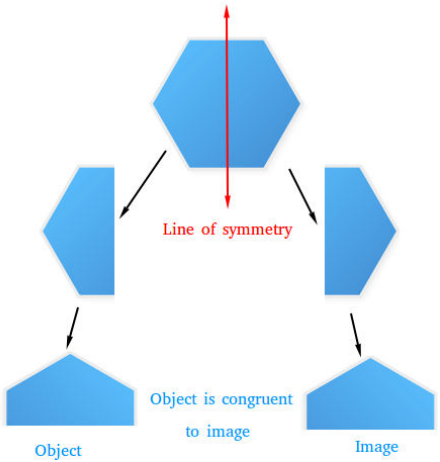


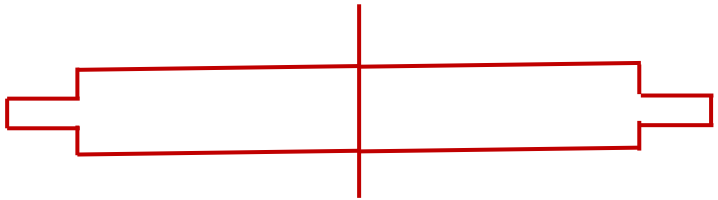
SYMMETRY

EXERCISE – 13(F)

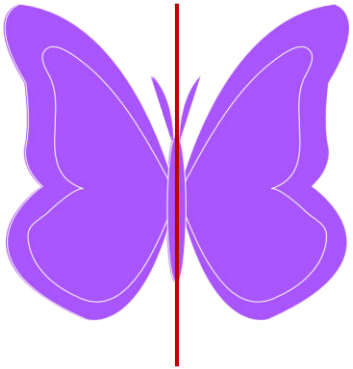
3. Complete the symmetrical figures given below. One is done for you.



(i)



(j)



CLASS TEST

FULL MARK - 10

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A. Fill in the blanks. **(1×3=3)**

1) A line has _____ end points.

2) The lines or line segments which cross each other at any point are known as _____ lines.

3) The length of the boundary of a circle is known as its .

CLASS TEST

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B. <u>Do as Directed</u>. **(2×2=4)**

4) Find the radius of the circle if its diameter is 42 cm.

5) Find the diameter of the circle if its radius is 24 cm.

CLASS TEST

FULL MARK - 10

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C. Answer the following. **(3×1=3)**

6) Draw a circle with the help of any circular object and mention its centre, radius and diameter?

CLASS TEST

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ANSWER

CLASS TEST

FULL MARK - 10

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A. Fill in the blanks. **(1×3=3)**

1) A line has 2 end points.

2) The lines or line segments which cross each other at any point are Intersecting line known as lines.

3) The length of the boundary of a circle is known as its circumference.

CLASS TEST

FULL MARK - 10

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B. Do as Directed. **(2×2=4)**

4) Find the radius of the circle if its diameter is 42 cm.

D = 42

$$\text{Radius} = \frac{Diameter}{2}$$

$$R = \frac{42}{2} = \mathbf{21\ cm}$$

Radius = 21 cm

CLASS TEST

FULL MARK - 10

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B. Do as Directed. **(2×2=4)**

5) Find the diameter of the circle if its radius is 24 cm.

R = 24

Diameter = 2 × Radius = 2 × R

D = 2 × 24 = **48 cm**

Diameter = 48 cm

CLASS TEST

FULL MARK - 10

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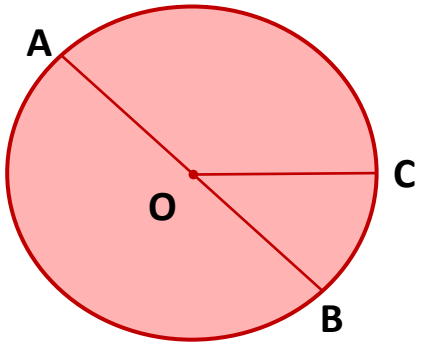
C. Answer the following. **(3×1=3)**

6) Draw a circle with the help of any circular object and mention its centre, radius and diameter?



O = Centre **OC = Radius**

AOB = Diameter

HOME ASSIGNMENT:

- **Complete Exercise – 13 F in your book.**

LEARNING OUTCOME:

Students are able to understand the meaning of symmetry and also able to recall the whole chapter through the class test.

ODM PUBLIC SCHOOL

THANKING YOU

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